

CLAIMS:

1. Data storage apparatus (1) comprising a data storage medium (2), in particular a disc drive (1) comprising a data storage disc (2), formatted in a pre-determined format architecture comprising a plurality of at least one format feature (8, 9, 10, 11, 12, 13, 14), and having a user area and a spare area defined thereon, characterised in that the format
5 architecture provides a plurality of spare area arrays (30, 40a, 40b) wherein each of the spare area arrays (30, 40a, 40b) is respectively assigned to essentially each of the plurality of the at least one format feature (8, 9, 10, 11, 12, 13, 14).
2. Data storage apparatus as claimed in claim 1, characterised in that essentially
10 each of a plurality of tracks (8) comprises at least one spare area array (30, 40a, 40b).
3. Data storage apparatus as claimed in claim 1 or 2, wherein a spare area array (30, 40a, 40b) comprises at least one and up to one hundred spare sectors, in particular up to ten, advantageously five spare sectors per track.
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4. Data storage apparatus as claimed in one of the preceding claims, characterised in that the format architecture provides a skew (18, 48) for two adjacent tracks (n, n + 1) being a mutual shift in place of corresponding sectors of two adjacent tracks (n, n + 1) in circumferential direction (19).
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5. Data storage apparatus as claimed in claim 4, characterised in that sectors of an outer track (n) are shifted circumferentially in the direction of rotation of the disc relative to corresponding sectors of an inner track (n + 1), wherein in particular the shift comprises at least the minimum number of sectors passed during a track switch upon rotation (19) of the
25 disc and/or a number of spare sectors (40a, 40b) comprised by a spare area array assigned to a respective track.
6. Data storage apparatus as claimed in claim 4 or 5, characterised in that a skew is extended by a number of sectors of one to ten.

7. Data storage apparatus as claimed in one of the claims 4 to 6, characterised in that the format architecture provides a parameter to set the skew (48) in correlation with the size of the spare area array (30, 40a, 40b).

8. Data storage apparatus (1) as claimed in one of the preceding claims, characterised in that a controller (6) having a control electronics, a microprocessor and a memory is provided wherein a buffer memory (RAM, ROM) is adapted for intermediate storing of data and the controller (6) is adapted to record the intermediate storing, wherein further an interface for connecting the storage apparatus to a host (7) is provided.

9. Method for handling a data storage apparatus (1), in particular a data storage apparatus (1) according to claim 1, comprising a data storage medium (2) formatted in a pre-determined architecture having a plurality of format features, and having a user area and a spare area defined thereon, wherein upon a data request of a host a controller (6) provides at least one format feature of the data, in particular at least a track and a sector, and wherein the medium (2) is rotated (19) and a head (3) is moved and actuated to access the format feature to transfer data therewith, characterised in that the format architecture provides a plurality of spare area arrays (30, 40a, 40b), wherein each of the spare area arrays (30, 40a, 40b) is respectively assigned to essentially each of the format features such that a spare area (30, 40a, 40b) is passed beyond the head (3) at least once before a track switch (41).

10. Method as claimed in claim 9, characterised in that the format feature is selected from the group consisting of: zones (9, 10, 11), cylinders (8), tracks (8) and blocks (12, 13, 14).

11. Method as claimed in claim 9 or 10, characterised in that a spare area array (30, 40a, 40b) is passed beyond the head (3) at least once after a track switch (41), in particular essentially first after a track switch (41).

12. Method as claimed in one of the claims 9 to 11, characterised in that the spare area array (30, 40a, 40b) is passed beyond the head (3) at least once per rotation (19) of the medium (2).

13. Method as claimed in one of the claims 9 to 12, characterised in that data are transferred as soon as the head (3) is positioned on the format feature, in particular track (8), determined by the controller (6).

- 5 14. Method as claimed in claim 13, characterised in that the data are sequentially transferred and are intermediately stored in sequential order in a buffer memory (RAM, ROM) and the data transfer is recorded by a controller (6) and subsequent the data are read out from the buffer memory (RAM, ROM) and are transmitted to the host (7) in logical order.